CLEAN SET OF CLAIMS

1. A method for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) transforming the digitized acoustic input signal to a time-frequency representation;

(b) utilizing transient detectors to detect transient duration in conjunction with estimating a background noise level in the time-frequency representation;

(c) for each interval of the time-frequency representation containing significant signal levels, comparing the time-frequency representation of such interval with a signal model and determining a template in the signal model that best matches the time-frequency representation of such interval, based in part on signal to noise ratio; and

(d) replacing the digitized acoustic input signal with a low-noise output signal comprising a mix of the digitized acoustic input signal and the best matching template.

2. A method for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) transforming the digitized acoustic input signal to a time-frequency representation;

(b) isolating transient sounds within the time-frequency representation;

(c) utilizing transient detectors to detect transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

(d) rescaling the time-frequency representation of the estimated background noise;

(e) comparing the rescaled time-frequency representation of each transient containing any signal of interest with a signal model and determining a template in the signal model that best matches such representation; and

(f) resynthesizing a low-noise output signal using the best matching template.

3. A system for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) means for transforming the digitized acoustic input signal to a time-frequency representation;

(b) means for utilizing transient detectors to detect transient duration in conjunction with estimating a background noise level in the time-frequency representation;

(c) for each interval of the time-frequency representation containing significant signal levels, means for comparing the time-frequency representation of such interval with a signal model and determining a template in the signal model that best matches the time-frequency representation of such interval, based in part on signal to noise ratio; and

(d) means for replacing the digitized acoustic input signal with a low-noise output signal comprising a mix of the digitized acoustic input signal and the best matching template.

4. A system for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) means for transforming the digitized acoustic input signal to a time-frequency representation;

(b) means for isolating transient sounds within the time-frequency representation;

(c) means for utilizing transient detectors to detect transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

(d) means for rescaling the time-frequency representation of the estimated background noise;

(e) means for comparing the rescaled time-frequency representation of each transient containing any signal of interest with a signal model and determining a template in the signal model that best matches such representation; and

(f) means for resynthesizing a low-noise output signal using the best matching template.

5. A computer program, stored on a computer-readable medium, for enhancing acoustic signal buried in noise within a digitized acoustic input signal, the computer program comprising instructions for causing a computer to:

(a) transform the digitized acoustic input signal to a time-frequency representation;

(b) use transient detectors to detect transient duration in conjunction with estimating a background noise level in the time-frequency representation;

(c) for each interval of the time-frequency representation containing significant signal levels, compare the time-frequency representation of such interval with a signal model and determine a template in the signal model that best matches the time-frequency representation of such interval, based in part on signal to noise ratio; and

(d) replace the digitized acoustic input signal with a low-noise output signal comprising a mix of the digitized acoustic input signal and the best matching template.

6. A computer program, stored on a computer-readable medium, for enhancing acoustic signal buried in noise within a digitized acoustic input signal, the computer program comprising instructions for causing a computer to:

(a) transform the digitized acoustic input signal to a time-frequency representation;

(b) isolate transient sounds within the time-frequency representation;

(c) use transient detectors to detect transient duration in conjunction with estimating background noise and include long transients without signal content and background noise between transients in such estimate;

(d) rescale the time-frequency representation of the estimated background noise;

(e) compare the rescaled time-frequency representation of each transient containing any signal of interest with a signal model and determine a template in the signal model that best matches such representation; and

(f) resynthesize a low-noise output signal using the best matching template.

7. A method for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) transforming the digitized acoustic input signal to a time-frequency representation;

(b) isolating transient sounds within the time-frequency representation;

(c) utilizing transient detectors to detect transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

(d) rescaling the time-frequency representation of the estimated background noise;

(e) comparing the rescaled time-frequency representation of each transient containing any signal of interest with a signal model and determining a template in the signal model that best matches such representation; and

(f) replacing the digitized acoustic input signal with a low-noise output signal comprising a mix of the digitized acoustic input signal and the best matching template.

8. A system for enhancing acoustic signal buried in noise within a digitized acoustic input signal, including:

(a) means for transforming the digitized acoustic input signal to a time-frequency representation;

(b) means for isolating transient sounds within the time-frequency representation;

(c) means for utilizing transient detectors to detect transient duration in conjunction with estimating background noise and including long transients without signal content and background noise between transients in such estimating;

(d) means for rescaling the time-frequency representation of the estimated background noise;

(e) means for comparing the rescaled time-frequency representation of each transient containing any signal of interest with a signal model and determining a template in the signal model that best matches such representation; and

(f) means for replacing the digitized acoustic input signal with a low-noise output signal comprising a mix of the digitized acoustic input signal and the best matching template.

9. A computer program, stored on a computer-readable medium, for enhancing acoustic signal buried in noise within a digitized acoustic input signal, the computer program comprising instructions for causing a computer to:

(a) transform the digitized acoustic input signal to a time-frequency representation;

(b) isolate transient sounds within the time-frequency representation;

(c) use transient detectors to detect transient duration in conjunction with estimating background noise and include long transients without signal content and background noise between transients in such estimate;

(d) rescale the time-frequency representation of the estimated background noise;

(e) compare the rescaled time-frequency representation of each transient containing any signal of interest with a signal model and determine a template in the signal model that best matches such representation; and

(f) replace the digitized acoustic input signal with a low-noise output signal comprising a mix of the digitized acoustic input signal and the best matching template.